DETERMINING INTENT BASED ON USER INTERACTION DATA

BACKGROUND

[0001] This disclosure relates generally to online systems, and in particular, to determining a prediction of an intent of an online system user.

[0002] An online system, such as a social networking system, can allow its users to connect to and to communicate with other online system users. Via the online system, users may create profiles or accounts that are tied to their identities and can include information about the users, such as interests and demographic information. The users may be individuals or entities such as corporations or organizations. Because of the increasing popularity of online systems and the increasing amount of user-specific information maintained by online systems, online systems can provide an ideal forum for advertisers to increase awareness about products or services by presenting advertisements to online system users.

[0003] Presenting content to users of an online system can allow a content provider to promote products, services, opinions, and/or causes. Additionally or alternatively, presenting content can allow the advertiser to persuade online system users to take action with respect to these products, services, opinions, and/or causes. However, under conventional approaches specifically arising in the realm of computer technology, it can be difficult for an online system to know, understand, determine, and/or predict the intentions of users with respect to taking action. For example, online systems that are search engines have more direct insight into what a user is interested in since the user inputs search terms describing those interests. But in systems where users are not providing this type of direct insight, the system may need a more creative approach to predict users' intent and find appropriate or relevant content to be selected for presentation to users via online systems.

SUMMARY

[0004] An online system, such as a social networking system, predicts likely intent of a user in taking certain actions and delivers content items matching the user's intent. To make this prediction effectively, the system trains one or more machine learning models to verify the accuracy of tracking pixels in reporting actions of users including by predicting the purpose of a content item or landing page and examining pixel fire data reported, and to predict a particular user's intent based on prior actions by that user. Features are collected for training the one or more models via human rater analysis or via machine or other analysis of data related to the content items, landing page, pixel fire, user, etc.

[0005] The online system can enable tracking pixels, web beacons, and/or other portions of computer code to be included in a third party web resource, such as a third party website. When users of the online system perform certain actions at landing pages or other web pages of third party websites, the tracking pixels can be triggered (i.e., executed, initiated, fired, etc.). A triggered tracking pixel can provide to the online system various types of data, such as information associated with a third party website (e.g., information associated with a landing page of the third party website), information associated with a user utilizing the third party website, and/or information associated with an interaction or action performed by the user with respect to the third party web site, etc. As another example, data can be collected as a mobile application event from the mobile application of the third party that is configured to use a software development kit (SDK) or application programming interface (API) associated with the online system for delivering data about user interactions on the mobile app.

[0006] In some embodiments, a plurality of features for each tracking pixel or mobile app event in a set of tracking pixels or mobile app events can be generated, created, or otherwise acquired (e.g., via human raters) based on a set of one or more content items associated with each tracking pixel and a set of one or more landing pages associated with each tracking pixel. For example, a plurality of features or attributes for a tracking pixel can be received, obtained, determined, or otherwise acquired based on information associated with a content item that enabled a user to access a landing page from which the tracking pixel was fired. The plurality of features or attributes for the tracking pixel can also be received, obtained, determined, or otherwise acquired based on information associated with the landing page. In this example, at least some of the plurality of features for the tracking pixel can be identified or otherwise acquired based on one or more features associated with the content item and/or one or more features associated with the landing page. These features for the content item and landing page can be created based on, for example, human raters analyzing the content item and landing page to gather data and label the purpose of each (such as whether they encourage a user to install an application, to sign up for a membership, to make a purchase, or otherwise). In one embodiment, human raters can also verify the accuracy of pixels used by third parties to detect actions by users (e.g., whether a pixel correctly reports that a user had a purchase event).

[0007] The acquired plurality of features for the tracking pixels can be utilized to train at least one machine learning model. In other words, the acquired plurality of features for the tracking pixels can be utilized as training data to build, develop, train, improve, and/or refine the at least one machine learning model. In some instances, the machine learning model can be trained to recognize, determine, and/or predict whether or not a particular user intends to produce a conversion (e.g., make a purchase). Moreover, in some implementations, interaction data associated with a user of a social networking system can be acquired. For instance, the disclosed technology can receive, obtain, and/or otherwise acquire historical web visitation data for the user based on the firing or triggering of various tracking pixels at various landing pages over a period of time. The interaction data associated with the user (e.g., web visitation data) can be applied to the machine learning model trained based on the plurality of features for each tracking pixel in the set of tracking pixels. In some cases, the interaction data associated with the user can be inputted into the machine learning model. In other cases, it can be used to train a separate machine learning model specific to a particular user's intent based on actions the user has taken in the past. Again, human raters or other mechanisms can be used to analyze samples of, for example, previous purchases made by users, to produce model training features, including looking at the user's pixel fire or app event history and identifying events that were associated with an action that the user ultimately took (e.g., a purchase by the user).